

**REMARKS**

Claims 1-36 are now in the application. Claims 1, 4, 9, 13-16 and 33 have been amended to recite "obtained" in place of ---obtainable--- for purposes of clarity. Claim 1 has also been amended to include recitations from prior claim 18. Claim 20 has been amended to include recitations from original claim 1 and to recite "obtained" in place of ---obtainable---.

Claim 29 has been amended by changing "the macromonomer gives" to read ---said macromonomer (I) gives--- for purposes of clarification.

The rejection of claims 1-36 under 35 U.S.C. § 112, second paragraph has been overcome by the amendments to the claims and therefore is not deemed tenable. In particular, the claims recite "obtained" in place of "obtainable."

Concerning the recited structure [I] of claim 1, claim 1 recites that the macromonomer [I] is a vinyl polymer and has terminally one polymerizable carbon-carbon double bond-containing group per molecule. The structure of [I] (polymerizable carbon-carbon double bond, its number, its position, and vinyl polymer) adequately is defined in claim 1.

Concerning the structure [II] of claim 29, claim 29 does not recite the structure of the monomer [II]. However, the structure of the monomer [II] is not restricted provided that the monomer [II] differs in structure from the macromonomer [I] and is capable of copolymerizing with the macromonomer [I] to give a graft copolymer.

Concerning, the structure III of claim 32, claim 32 recites that the polymer [III] has terminally two or more polymerizable carbon-carbon double bond-containing groups per molecule. The structure of [III] (polymerizable carbon-carbon double bond, its number, and its position) is defined in claim 32.

Concerning the objection to claims 19-24, claim 19 has been canceled and claim 20 has been rewritten into independent form. Claims 21-24 depend from amended claim 20, rendering moot the objection to these claims.

Claims 1-8, 10-13, 17-24, 29 and 36 were rejected under 35 U.S.C. § 102(b) as being anticipated by Matyjaszewski *et al.* (U.S. Patent 5,763,548).

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Claims 1-6, 9-13, 17, 19-22, 24-36 are rejected under 35 U.S.C. § 102(b) as being anticipated by EP 0261942.

Claims 1 and 13-15 were rejected under 35 U.S.C. § 102(b) as being anticipated by JP 50-150,793.

Claims 13-16, 25-28, 31 and 32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Matyjaszewski.

The cited references do not anticipate and do not render obvious the present invention.

With respect to claim 1 and claims dependent thereon, amended claim 1 includes recitations from original claim 18. Since claim 18 was not rejected over EP 0261942 or JP-50-150,793 the rejections over these references have been rendered moot by the amendments to claim 1.

Concerning the rejection over U.S. Patent 5,763,548 to Matyjaszewski, *et al.* claim 1 recites polymerizing a macromonomer [I] that is a vinyl polymer obtained by radical polymerization and terminally has one polymerizable carbon-carbon double bond-containing group per molecule.

However, Matyjaszewski does not disclose such a macromonomer and its polymerization step.

As the Examiner stated, Matyjaszewski merely disclose the synthesis of a macromolecule having at least two halogen groups which can be used as a macroinitiator component to subsequently form a block or graft copolymer by an atom or group transfer radical polymerization process. The macromolecule of Matyjaszewski is a macroinitiator, but not the macromonomer [I] as recited in claim 1. The macromonomer [I] recited in claim 1 terminally has one polymerizable carbon-carbon double bond-containing group per molecule.

Matyjaszewski suggests a polymer having two double bonds in Example 23. This polymer is different from the macromonomer [I] recited in claim 1, which have one polymerizable carbon-carbon double bond-containing group per molecule.

Therefore, Matyjaszewski does not suggest the macromonomer [I] recited in claim 1 and its polymerization step.

Accordingly, claim 1 and the claims dependent therein are not anticipated by Matyjaszewski or would not have been obvious over Matyjaszewski.

With respect to claim 20 and its dependent claims, amended claim 20 corresponds to original claim 20 in independent form. Since original claim 20 was not rejected over JP 50-150,793 (page 6 of the Office Action), this rejection does not apply to claim 20. Concerning the rejection over Matyjaszewski, amended claim 20 recites polymerizing a macromonomer [I] that is a vinyl polymer obtained by radical polymerization and terminally has one polymerizable carbon-carbon double bond-containing group per molecule. These recitations are the same as those in amended claim 1. Accordingly, the rejection of claim 20 based upon Matyjaszewski has been overcome for the above reasons concerning claim 1.

Concerning EP 0261 942, amended claim 20 recites that polymerization of the macromonomer [I] to produce a branched polymer is conducted in the manner of living radical polymerization.

EP 0261 942 suggests that the macromonomer can be employed to produce graft polymers which are useful in coating and molding resins. However, EP 0261 942 does not suggest that polymerization of the macromonomer is conducted in the manner of living radical polymerization.

Therefore, claim 20 and the claims dependent thereon are not anticipated by EP 0261 942 or would not have been obvious over EP 0261 942.

The cited references fail to anticipate the present invention. In particular, anticipation requires the disclosure, in a prior art reference, of each and every recitation as set forth in the claims. *See Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 1 USPQ2d 1081 (Fed. Cir. 1986), and *Akzo N.V. v. U.S. International Trade Commissioner*, 1 USPQ2d 1241 (Fed. Cir. 1986).

There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. § 102. See *Scripps Clinic and Research Foundation v. Genetech, Inc.*, 18 USPQ2d 1001 (CAFC 1991) and *Studiengesellschaft Kohle GmbH v. Dart Industries*, 220 USPQ 841 (CAFC 1984).

Also, the cited art lacks the necessary direction or incentive to those of ordinary skill in the art to render under 35 USC 103 sustainable. The cited art fails to provide the degree of predictability of success of achieving the properties attainable by the present invention needed to sustain a rejection under 35 USC 103. See *Diversitech Corp. v. Century Steps, Inc.* 7 USPQ2d 1315 (Fed. Cir. 1988), *In re Mercier*, 185 USPQ 774 (CCPA 1975) and *In re Naylor*, 152 USPQ 106 (CCPA 1966).

Moreover, the properties of the subject matter and improvements which are inherent in the claimed subject matter and disclosed in the specification are to be considered when evaluating the question of obviousness under 35 USC 103. See *Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 USPQ2d. 1923 (Fed. Cir. 1990), *In re Antonie*, 195, USPQ 6 (CCPA 1977), *In re Estes*, 164 USPQ (CCPA 1970), and *In re Papesch*, 137 USPQ 43 (CCPA 1963).

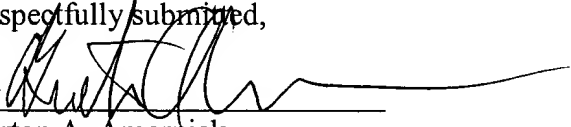
No property can be ignored in determining patentability and comparing the claimed invention to the cited art. Along these lines, see *In re Papesch*, supra, *In re Burt et al.* 148 USPQ 548 (CCPA 1966), *In re Ward*, 141 USPQ 227 (CCPA 1964), and *In re Cescon*, 177 USPQ 264 (CCPA 1973).

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned **“Version with markings to show changes made.”**

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

Dated: January 14, 2003

Respectfully submitted,

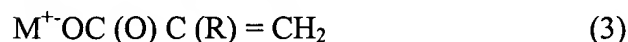
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**Version With Markings to Show Changes Made**

1. (Amended) A production method of a branched polymer which comprises polymerizing a macromonomer [I], said macromonomer [I] being a vinyl polymer [obtainable] obtained by radical polymerization and terminally having one polymerizable carbon-carbon double bond-containing group per molecule[.],  
wherein the macromonomer [I] has a weight average molecular weight (Mw)-to-number average molecular weight (Mn) ratio (Mw/Mn) of less than 1.8 as determined by gel permeation chromatography.
4. (Amended) The production method according to Claim 1, wherein the main chain of the macromonomer (I) comprises a vinyl polymer [obtainable] obtained by living radical polymerization.
9. (Amended) The production method according to Claim 1, wherein the main chain of the macromonomer (I) comprises a vinyl polymer [obtainable] obtained by polymerization of a vinyl monomer using a chain transfer agent.
13. (Amended) The production method according to Claim 1, wherein the macromonomer (I) is [obtainable] obtained by substituting a compound having a radical-polymerizable carbon-carbon double bond for a terminal halogen group of a vinyl polymer.
14. (Amended) The production method according to Claim 13, wherein the macromonomer (I) is [obtainable] obtained by reacting a vinyl polymer having a terminal halogen group represented by the general formula (2):  
$$-\text{CR}^1\text{R}^2\text{X} \quad (2)$$

wherein  $R^1$  and  $R^2$  each represents a group attached to an ethylenically unsaturated group of a vinyl monomer and X represents a chlorine, bromine or iodine atom, with a compound represented by the general formula (3):



wherein R represents a hydrogen atom or a monovalent organic group containing 1 to 20 carbon atoms and  $M^+$  represents an alkali metal or a quaternary ammonium ion, for substitution for the terminal halogen group.

15. (Amended) The production method according to Claim 1,

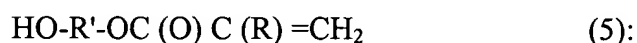
wherein the macromonomer (I) is [obtainable] obtained by reacting a hydroxy-terminated vinyl polymer with a compound represented by the general formula (4):



wherein R represents a hydrogen atom or a monovalent organic group containing 1 to 20 carbon atoms and X represents a chlorine, bromine atom or a hydroxyl group.

16. (Amended) The production method according to Claim 1,

wherein the macromonomer (I) is [obtainable] obtained by reacting a hydroxy-terminated vinyl polymer with a diisocyanate compound and reacting the remaining isocyanato group with a compound represented by the general formula (5):



wherein R represents a hydrogen atom or a monovalent organic group containing 1 to 20 carbon atoms and R' represents a divalent organic group containing 2 to 20 carbon atoms.

20. (Amended) A production method [according to claim 19] of a branched polymer which comprises polymerizing a macromonomer (I),

said macromonomer (I) being a vinyl polymer obtained by radical polymerization and terminally having one polymerizable carbon-carbon double bond-containing group per molecule,

wherein polymerization of the macromonomer (I) is conducted in the manner of living radical polymerization.

29. (Amended) The production method according to Claim 1,  
wherein the copolymerization of the macromonomer (I) with a copolymerizable  
monomer (II) other than [the] said macromonomer (I) gives a graft copolymer.

33. (Amended) A branched polymer [obtained] obtained by the production method  
according to Claim 1.